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SCIENCE NEWS LETTER

TECHNOLOGY DEPT.

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MARCH 18, 1944

Future Scientists

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A SCIENCE SERVICE PUBLICATION

GENERAL SCIENCE

Science Scholarships

Wyoming country boy and New York girl win $2,400 each as top students in the Science Talent Search. Eight receive $400 scholarships.

See Front Cover

➤ AMBER Charles Davidson, 17, of Fort Bridger, Wyo., and Anne Hagopian, 16, of New York City, were awarded four-year $2,400 Westinghouse Grand Science Scholarships, top honors in the Third Annual Science Talent Search. Their portraits are shown on the cover of this SCIENCE NEWS LETTER.

They were chosen by a board of judges for the highest awards given. Eight other teen-age scientists were selected to receive four-year Westinghouse Science Scholarships worth four hundred dollars each, three were awarded two-hundred-dollar scholarships, and 25 were granted one-year Westinghouse Science Scholarships of one hundred dollars each.

Alternates for the two top scholarships were named as follows: Robert Harry Kraichnan, Elkins Park, Pa., for the boy, and Mary Ruth Bond, Milton, N. Y., for the girl.

Charles

Amber Charles Davidson, the top boy finalist, is a country boy, who in addition to his scientific interests embracing such subjects as electronics, chemistry, microscopy, painting and biology, is an athlete. He was captain of the football team at Lyman High School, and was a light-heavyweight boxer. He has been working for the past six years on his own scientific projects, and has built a highly departmentalized home shop to accommodate his interests. One of his projects is the design of an "invisible searchlight," using infra-red rays and an electronic pick-up, for military use in scanning enemy battle lines undetected. He plans to become a research scientist.

SCIENCE TALENT INSTITUTE ***—Alternates for the $2,400 scholarships are shown on the top row of the facing page: left, Robert Kraichnan and right, Mary Ruth Bond. Center, group of winners at Lincoln Memorial. Second row left, Dr. Karl T. Compton with the top winners, Anne Hagopian and Charles Davidson; right, Dr. Harlow Shapley discussing relativity with a group at a luncheon. Seated are Robert Kraichnan, Dr. Shapley and Donald Tschudy. Standing, Roy Corr, Ben Mottelson, Charles Butler, Rodman Jenkins, Irving Rozian, Albert Earle, and 1942 winner Herbert Halberstadt. Portraits below: Kenneth Ford, Nancy Durant, Lionel Jaffe. Bottom: Murray Gerstenhaber, Rodman Jenkins, Irving Rozian.***

Anne

Sixteen-year-old Anne Hagopian, who is small and dark-haired, is the youngest girl finalist ever selected to receive the Westinghouse Grand Science Scholarship. A student at the Brearley School in New York City, she paints and draws in addition to her scientific interests. She has constructed models of atoms, and an original model to demonstrate principles of geometry. She plans to attend Radcliffe College, and to become a research physicist.

Members of the board of judges were Dr. Harlow Shapley, director of Harvard Observatory; Dr. Harold A. Edgerton, Director of the Occupational Opportunities Service of Ohio State University, Columbus, Ohio; and Dr. Steuart Henderson Britt, Washington psychologist.

The third annual nationwide Science Talent Search opened last fall when 50,000 high school principals and science teachers were asked to assist in finding the 40 seniors most talented in science in the nation's public, private, and denominational high schools.

As a result, some 15,000 science-minded students entered the Search. Entry entailed the taking of a stiff, three-hour science aptitude examination; writing an original 1,000-word essay on the subject "My Scientific Project"; and the submission by faculty of complete scholastic and personal records, together with recommendations by teachers and principals.

From these data, 40 of the entrants were selected by the board of judges as finalists in the Search, and invited to Washington for the five-day Science Talent Institute, with all expenses paid. During the screening by the judges, all entrants were identifiable only by serial numbers—names and geographical locations of the finalists' home towns being withheld even from the judges until the top 40 were chosen.

Award of the scholarships among the finalists was determined on the basis of final examinations and individual interviews with the board of judges during the Institute. The young delegates also met and talked with some of the nation's leading scientists, educators and high government officials, including Vice President Henry A. Wallace. On the opening day of the Institute they were received at the White House by Mrs. Franklin D. Roosevelt, and were shown many of the famous rooms in the nation's first residence.

A total of $11,100 in scholarships was awarded in this year's Science Talent Search, which is conducted by Science Clubs of America, a Science Service activity. The scholarships are provided by the Westinghouse Electric & Manufacturing Company as a contribution to the advancement of science in America.

The scholarships can be used to attend any degree-granting college or university of the recipient's choice, subject to the approval of the scholarship committee of the Science Clubs of America. Scholarships will be held in trust, for use after the war, for any recipients unable to use them immediately because they enter military or other government service. Acceptance of the Science Talent Search scholarships does not prevent recipients from accepting other scholarship offers.

Objectives

The objectives of the Science Talent Search, as outlined by Watson Davis, Director of Science Clubs of America, are:

1. To discover and foster the education of boys and girls whose scientific talent indicates potential creative ability and warrants scholarships for its development.

2. To focus the attention of large numbers of scientifically-gifted youths on the need for perfecting scientific and research skill and knowledge so that they can increase their capacity for contributing to the task of winning the war and the peace to follow.

3. To help make the American public aware of the role of science in the war and in the post-war reconstruction.

GENERAL SCIENCE

Young Scientists and War

By DR. KARL T. COMPTON

President, Massachusetts Institute of Technology

Address given before the Awards Dinner of the Third Annual Science Talent Institute, March 7, 1944.

➤ THIS SCIENCE Talent Search, so significant and stimulating to you, strikes an especially responsive chord in my mind at this time because I also am searching for science talent in another connection. As a member of a war agency charged with organizing a nation-wide program of scientific research to develop new and better weapons for our armed forces, I have come to realize that, fine as our scientific progress has been during the past generation, we are still far short of the number of high grade scientists and engineers which our country urgently needs both in war and peace. For assistance in the present war emergency I wish there were some transformation whereby you could suddenly be made a few years older in training and experience, so that you could at once help out with some of the present scientific problems.

This thought leads me to the following observations:

1. A large group of well trained and creative scientists, thousands of them, is the most important type of standing army for national defense. Battleships, aircraft and artillery of today will become obsolete, but a nation possessing a great reserve of scientists and engineers can mobilize them to create still more powerful weapons of defense and offense as the need arises. Therefore I believe that an essential part of any program for making our country safe after this war has been won will be an armed force large enough to enforce or police whatever commitment our country makes toward maintaining the peace of the world, together with such a great reservoir of science talent that a great army could quickly be equipped with superior weapons if the political arrangements for maintaining world peace should again fail.

2. The attractive aspect of this program for national security is that this lot of scientists is just as necessary to peacetime economy as it would be in the unhappy event of another war. To repair the economic losses caused by this war, by getting industrial production of peacetime goods going again at top speed, will require very many applied scientists and engineers. To create ever higher standards of health, prosperity and opportunity for interesting living for the general public will call without limit on all the powers of all the scientists of all types: theoretical and applied, physical and social, science of the mind, of the body and of our physical environment. New knowledge and new applications of knowledge offer unlimited frontiers for exciting and rewarding exploration.

3. Science can be a life-long career, but more than most professions it offers possibility of distinguished achievement to those of talent relatively early in their careers. A very large proportion of the greatest scientific discoveries have been made by men in their twenties or early thirties. This may be because youth is more imaginative and less conservative than old age. Don't let yourselves be discouraged by observing that textbooks usually show pictures of great scientists as elderly men; this only means that their portraits were not painted until sometime after their great work was done.

The present war work of scientists illustrates the opportunities for young scientists and engineers, and the fact that they do not need to grow old before they can be useful. Some of the largest and most important firms now manufacturing materials for the war report that about one third of their entire engineering staffs are young people below the age of twenty-six, and that without the services of these young engineers the essential war production of these firms would have to be greatly curtailed. I know one group engaged in developing a device of the very highest war priority in which ninety per cent of the staff are below twenty-six years of age. There are literally no other scientists in the world who could take their places at this time, for they have themselves developed a new art.

So, young men and women who have shown evidence of talent in science, I congratulate you. I congratulate you not only on your having been selected, amid strong competition, for special recognition in this Science Talent Search, I congratulate you even more because you are entering a career whose importance is great, and whose great opportunities lie not many years ahead of you. Speaking from my personal experience and acquaintance with other scientists, I can say unreservedly that it is a career in which you can find great personal satisfaction.

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The earliest known *scientific document* is probably the Edwin Smith Papyrus, a copy, made in the seventeenth century B.C., of an older Egyptian medical book on surgery and external medicine.

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Westinghouse Science Scholarships Winners

GRAND SCHOLARSHIPS OF $2,400

Hagopian, Anne, New York, N. Y.
Davidson, Amber Charles, Lyman, Wyo.

ALTERNATES

Bond, Mary Ruth, Marlboro, N. Y.
Kraichnan, Robert Harry, Elkins Park (Phila.), Pa.

SCHOLARSHIPS OF $400

Bond, Mary Ruth, Marlboro, N. Y.
Durant, Nancy Agnes, Washington, D. C.
Ford, Kenneth William, Exeter, N. H.
Gerstenhaber, Murray, New York, N. Y.
Jaffe, Lionel Francis, Brooklyn, N. Y.
Jenkins, Rodman, Anniston, Ala.
Kraichnan, Robert Harry, Elkins Park (Phila.), Pa.
Rozian, Irving William, Hazel Park, Mich.

SCHOLARSHIPS OF $200 AND ALTERNATES FOR $400

Baird, Joan Audry, Whitesboro, N. Y.
1st—Zablow, Leonard, New York, N. Y.
2nd—Poirier, Jacques Charles, Washington, D. C.

SCHOLARSHIPS OF $100

Deiters, Rosemary Julia, Mt. St. Joseph, Ohio
Dunkel, Patricia Ann, Rochester, N. Y.
Honour, Nan, Atlanta, Ga.
Irving, Ellen Mary, New York, N. Y.
Marrison, Joyce Mildred, Millburn, N. J.
Miles, Ruth Hulda, Fennimore, Wis.
Slaven, Nancy Waddell, Williamson, W. Va.
Springer, Eleanor Jane, Edwardsville, Ill.
Butler, Charles William, Madison, Wis.
Corr, Royal Marden, Milwaukee, Wis.
Daniels, Gilbert Samuel, Brooklyn, N. Y.
Dyett, Edmond Granger, Jr., Rome, N. Y.
Earle, Albert Porter, Overbrook (Phila.), Pa.
Fickett, Wildon, Tucson, Ariz.
Green, Leon William, Passaic, N. J.
Hershenson, Lee Morton, Pittsburgh, Pa.
Hinkle, Richard Gordon, Tahoe, Calif.
Houck, Theodore Edwin, Rochester, N. Y.
Howlett, Eric Mayorga, Roslyn Heights, N. Y.
Mayper, Victor, Jr., Manlius, N. Y.
Mottelson, Ben Roy, LaGrange, Ill.
Newcomb, William Adrian, Garden City, N. Y.
Noland, Wayland Evan, Madison, Wis.
Stelzenmuller, Cyril Vaughn, Birmingham, Ala.
Tschudy, Donald Paul, Atlantic City, N. J.

Judges: Dr. Harlow Shapley; Dr. Steuart Henderson Britt; Dr. Harold A. Edgerton.

GENERAL SCIENCE

Science Students and China's Reconstruction

By PIN-CHUAN HO

Professor of Physics, National Tsing-hua University, Kunming, China

Address given before the Science Talent Institute.

BEFORE the war China had almost all her industrial plants and educational institutions situated in the coastal provinces. After Japanese occupation of all these provinces, Chinese government has kept a dual program in function, giving an armed resistance to the invaders on the one hand and carrying on the work of national reconstruction on the other.

During the last six years some 3,000 factories have been put into operation, and more than 100 colleges and universities re-established in the interior which was more or less undeveloped as compared with coastal provinces. Owing to the urgent need of large numbers of scientific and technical specialists for the work of national reconstruction, China has had more educational institutions in the wartime than in the prewar time. Taking, as an instance, the case of higher education, the number of colleges and universities was 129 with 59,457 students in 1942 compared with the number 108 with 40,609 students in 1936. Eighty per cent of the students came from the occupied territories, some marching on foot for months from north to south and east to west.

There has also been a great increase in the percentage of the number of the students taking applied science as their subjects of learning. For instance, there were 24% of college students registered for different branches of engineering in 1942, while the percentage was only 17 in 1936. This number of science students is of course too small for China's national reconstruction, especially so when considering the industrialization of China after war.

Chinese government has recently set up a plan for the first ten years after war, regarding the work of national industrialization. This plan is based entirely on Dr. Sun Yat-sen's industrial program, who is the founder of Chinese Republic. To complete Dr. Sun's whole program requires 30-50 years. For this first ten years' plan, it has been figured out that China needs some 520,000 graduates from the science and technical colleges and 580,000 from the secondary technical schools. Chinese government is going to increase her institutions of science and technology to a possible large number. It is also her intention to send a large number of students abroad, especially to U. S. A. and Great Britain, for their training. I am sure Chinese government and her people appreciate the friendly help given by U. S. A. and Great Britain as regards China's national reconstruction.

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VISIT TO CAPITOL—The Science Talent Search winners visited the scientist-statesman Vice President Henry A. Wallace. Of those visible, left to right: Wildon Fickett, Charles Butler, Donald Tschudy, Ben Mottelson, Ellen Irving, Theodore Houck, Mary Ruth Bond, Joyce Marrison, Wayland Noland, Nancy Slaven, Joan Baird, Jacques Poirier, Vice President Wallace, Lee Hershenson, Leonard Zablow, Anne Hagopian, Murray Gerstenhaber, Leon Green, Nancy Durant, Eleanor Springer, Robert Kraichnan, Gilbert Daniels, Rosemary Deiters, Irving Rozian, Victor Mayper, Eric Howlett, Cyril Stelzenmuller.

PHYSICS

Better Lighting Promised For World of Future

By DR. S. G. HIBBEN

Director of Applied Lighting, Westinghouse Lamp Division

Excerpts from address given before the Science Talent Institute.

➤ SINCE we all hope to do tomorrow's jobs in a better way, it is gratifying to realize that better tools and new tools are being invented and developed, especially those making use of radiant energy. In fact in tomorrow's civilization perhaps the greatest promise of better days lies in the great rainbow of the ether spectrum, or the radiations encompassed between long wave radio broadcasting with its relatively low frequencies together with long wavelengths of several miles, all the long way up to the secondary radiations associated with cosmic emanations where frequencies are measured in millions of millions of millions of cycles, and where the inconceivably short wavelengths represent the nadir of nothingness.

We have not developed all of the tools that some day may put to use all of the 80 or more octaves of this great ether spectrum, and since there still are "darkest Africas" to be explored, therein lies an exciting challenge to oncoming generations of scientists. Indicative of the rush of scientific research in merely the one very limited region whereof the human eye is the most common receiving photocell, and in about one octave on either side, or a total of three octaves of radiation altogether, we may note the following developments.

1. Heat lamps signal the beginning of filament type electric "lamps" radiating some 90% of their output energy generally centering around a wavelength of about 12,000 A, and from which the visible light is a by-product. Heat lamps may substitute for many of the present ineffective methods of cooking. Frying eggs or grilling chops figuratively shout aloud for research help.

2. Within the one octave of the visible spectrum it is hoped that the production of cold light, probably by fluorescence, can yet be doubled in efficiency and given a plurality of tints and hues.

3. In the near ultraviolet region, sources of radiation will be needed in expanding numbers to produce "black light," generally of about 3600 A wavelength for the excitation of fluorescent dyed fabrics such as carpets, upholstery and drapery in interior furnishings, or for ornamental changes of pattern and appearance, or in connection with crime detection, analyses of diseases and drugs, for determination of age and quality of materials and for checks on food adulterations, etc.

4. Further into the ultraviolet we find an increasing interest in the tools that are represented by lamps reproducing anti-rachitic sunshine, or for health maintenance in general, while further down the scale in the general region of the 2537 A line of mercury vapor we find perhaps the most important tool of all, namely, the Sterilamp or germicidal lamps to kill pathogenic bacteria and spore of mold forming fungi. These devices promise to control infectious diseases and should become great adjuncts to the operations of air conditioning.

Many "unknowns" await the future scientist—how to get 100 lumens per watt from a light source (or 1/6 of the possible efficiency); how to get two colors from the same electrical discharge in a gas or vapor; how to combine fluorescence with phosphorescence and prolong the rate of decay of the latter; how to conserve fuel by placing radiant heat directly onto the body or into the object involved rather than to heat the air; how to develop indoor sunshine for a vegetable garden in the basement or for comfortable seeing in the factory; how to develop walls and ceilings as softly glowing light sources; or how to use visible light as a glorifying medium, sometimes described as mood conditioning, rather than the heretofore elementary job of simple utilitarian seeing.

Science News Letter, March 18, 1944

AERONAUTICS

Aeronautical Engineering Scientific Methods

By DR. R. G. ROBINSON

National Advisory Committee for Aeronautics

Excerpts from address given before the Science Talent Institute.

➤ THE MAGNIFICENT performance of American Army and Naval air forces in the present war is known by ourselves, by our allies, and by our enemies, but the means for coming up with the excellent airplanes that our unsurpassed air crews use in establishing this record is less well known.

I think we can show that in aeronautics the path from theory or scientific fact to the final practical form of an aircraft, whether we look at the pieces or the whole, is direct, short, and well traveled. We can show that successful airplane design comes only from traveling this path and that the consequences of neglecting this close connection are many and serious.

If the airplane design process is examined, it will be seen that the close and exclusive relation between the job to be done and the part or parts that do it is not just apparent but is real. The connection between theory and practice is a strong and intimate one. Each leans heavily on the other. Parts or features that do not contribute directly to the efficient performance of the aircraft simply do not exist. For this reason aircraft design is perhaps the most nearly functional of any present design activity—the airplane and its parts are designed to carry out their single or multiple functions with the utmost efficiency and with no compromise because of appearance, traditional design, or materials of construction.

In aircraft design, about the only matters considered in addition to function are dependability, serviceability, and

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"Science has always been my first love. Subsequently my scientific project is a large and inclusive one, for it will last the length of my life. There are many small but important problems which I am working on, and will continue working on in the future. When I was eleven years old I built a small shop which has grown much larger since that time. My shop is so organized that I can work on one hobby without disturbing another. Chemistry is in one section, radio, electronics, photography, microscopy, lens grinding, etc., in other sections. The reason I follow several hobbies is that I do not believe it is good for a person to become too one-sided or centered in one thing. I think he should have a well balanced knowledge in order to develop fully. I have spent many hours in my shop, assembling the apparatus and wiring circuits I read about in books to learn why a circuit was wired as it was to get a certain result, and a thousand other experiments to learn in a practical way the laws that govern these things. Yes, even our lives, for is not the aim of science to find and apply laws which govern our lives, and by doing so make our life and that of our posterity better? A knowledge of science will make a highly educated and advanced people."
—From the essay of Charles Davidson.

"With such tools as the light spectrum, the X-ray spectrum, and the bombardment and transmutation of atomic nuclei, men search into the atom and slowly find the answers to their questions. Which theory of atomic structure is the most nearly true? The Bohr Theory is the most comprehensive but how can it explain convincingly the phenomenon of crystallization or the formation of molecules? Is there really one fundamental substance that composes all matter? The electron and the neutron seem to be the most basic substances. Perhaps they are only states of strain in a field of electricity and the Bohr Theory is merely a pictorialization of mathematical facts. Such knowledge would have countless applications: The formation of new substances with any desired properties, cheaper and better radioactive substances for medical work, all kinds of electronic devices. It will take years of preparation and study, but someday I want to contribute one small piece of knowledge toward answering these questions, and toward the understanding of the ultimate nature of the universe."—From the essay of Anne Hagopian.

cost of manufacture, but even these items are weighed differently than in other industries. The first two are given careful quantitative analysis so that no more weight or complication is added than is absolutely required to meet the forces for the intended life of the aircraft. Cost of manufacture is considered, of course, but in view of the fact that an extra pound of weight in the aircraft costs about $30 a year per airplane to carry around, or about $12,000 per pound for a large airline using airplanes of a given type for five years, as is common. For this reason, ease of manufacture is attained more by refinement of design and improved methods, such as joining by spot welding or Cycleweld and making simplified parts with special equipment, than by standardizing on one part for several jobs or by redesigning to make the part in a machine tool having arbitrary limitations of size and ability.

What, then, are the requirements the airplane is designed to meet? We find that the shape of an airplane is all-important. Its external form in every detail and the shape of all internal passages that carry air or any gases are determined by the principles of fluid flow.

The power plant installation must provide for proper and efficient functioning of the engine without harming the aerodynamic characteristics of the airplane and with a minimum total weight.

To meet the exacting requirements of airplane design with great precision and with no excess weight, the designer must follow rational, scientifically correct methods and must pass up the temptation to adapt previously-used forms to his design.

Another characteristic of aeronautical work is the desire, if not the necessity, to eliminate unknown quantities. Many factors that are a matter of guesswork in other fields must be brought to the point of complete familiarity in aeronautical design by measurement, and by statistical information where the events are complex and do not repeat themselves exactly.

As an example of the collection of information difficult to obtain but vital to the success and safety of all aircraft, an instrument known as the NACA V-G Recorder has been at work automatically plotting the severity of bumps experienced for a total flying time of 150,000 hours amassed with landplanes and flying boats on routes all over the world over a period of ten years. This information, taken with other data obtained in flight research, fixes the probability of encountering gusts (air pockets) of different intensities, and we design our aircraft to be proportionately strong—and no heavier. The instrument is used similarly to determine how roughly military pilots handle their combat airplanes. In the cases I have discussed the information obtained has been used to specify the strength that should be built into aircraft of different types and, as a result, structural failures have been exceedingly rare.

The subject of fatigue suggests pilot and passengers who are sensitive to the same things to which the airplane structure is sensitive. We must study their physiological disposition to put up with given conditions for the same length of time as the airplane itself—that is, determine the extent of human fatigue. It will be seen that other human capabilities and limitations such as pilot strength and reaction, piloting habits, vision, comfort, etc., must be considered in airplane design. This field of research which touches both biology and aeronautical engineering is just now beginning to receive widespread attention. The names of various phases such as aeromedicine and biomechanics indicate the combined physiological and engineering viewpoint.

CONSERVATION

Americans Should Attack Soil Erosion Causes

By DR. W. C. LOWDERMILK

Assistant Chief, Soil Conservation Service, U. S. Department of Agriculture

Excerpts from address given before the Science Talent Institute.

➤ FOOD comes from the soil of Mother Earth. The land and its water nourish us, the children of men. Our wartime goals, as those of post-war will be, are production enough for needs of our people and some for export. This food must come almost entirely from crops growing in soils of the land.

This land is the silent partner of tillers of soil in growing food for today and tomorrow. If either partner weakens or fails, crops are lessened or fail. The land yields its increase to husbandmen who work it and care for it with understanding and skill. The earth rewards richly the knowing and diligent; it impoverishes the wasteful. This partnership of land and farmer is the rock foundation of our complex social structure. On this foundation is built our many industries and professions, and our opportunity of the ages to build the American dream.

But this land partner may be damaged—seriously damaged and destroyed for further use by inconsiderate, wasteful and reckless use. The land may be destroyed for further growing of needful crops if soil erosion is let run riot through our fields. We have learned this from a long series of scientific studies. The facts shock thinking people; they challenge our youth. We have now an understanding of this insidious menace to our food supply from year to year and how we may bring it under control for security and welfare of the nation in times of war as well as in times of peace. We have only made a beginning in this great task.

When young and old fully understand this insidious enemy of civilization—soil erosion—we shall then make an all-out attack on the waster of the Good Earth. We shall find a substitute for war, full of adventure and challenge, that should lure mankind, weary of destruction, to the saving and healing works of use with conservation of the Holy Earth as the necessary basis for a new world of peace, with hope of abundance for all, and of happiness.

STATISTICS

Married Life Grows Longer by Five Years

➤ "TILL DEATH do us part" is five years farther away for the average couple getting married today than it was for those marrying 20 years ago, Metropolitan Life Insurance Company statisticians figure.

A groom 25 years old and a bride of the same age, the statisticians find, may expect to live together 37 years on the average, according to mortality conditions in the white population of the United States in 1939-41.

Husbands and wives who are both 40 years old can look forward to 25 years more of married life, on the average.

"Even at age 65, when the husband is ready for retirement, he may expect to share the next eight and one-half years with his wife if she is of the same age," the report states.

The length of married life is affected by any difference in age between husband and wife. The joint expectation of life is appreciably less than that for either of the individual lives. This is in accordance with the principle that the probability of either one of two individuals surviving from one given age to another is greater than the probability of both so surviving.

A white man at age 25, for example has an expectation of life of 43.2 years and a white woman the same age an expectation of 46.7 years. Their joint expectation of life, however, is only 37 years.

Science News Letter, March 18, 1944

MEDICINE

New Chemical on Trial As Tuberculosis Remedy

➤ SOME of you probably have been reading about various chemicals being tried as remedies for tuberculosis. Promizole, a fine white powder with a mild but lingering bitter taste, is the latest of these. Chemically, it is known as a sulfone, as are promin and diasone.

All three of these are extremely effective in experimental tuberculosis in guinea pigs. Promin and diasone, unfortunately, are relatively toxic for humans when given in the size doses necessary to achieve an effect on the disease. Promizole is about twice as effective as promin, or equally effective in half the dose, in guinea pig tuberculosis and appears to be much less toxic for humans than the other chemicals that have been effective in the guinea pig disease.

During the past year promizole has been given to 56 patients with no serious toxic effects, even when given daily for as long as four months. Unlike most of the sulfa drugs, to which it is distantly related, it apparently is not capable of producing kidney damage. It can be given by mouth, either in capsules or in water or fruit juice.

Tuberculosis patients and their relatives, however, should not hope for too much from these favorable reports about promizole. The Mayo Foundation scientists, Dr. W. H. Feldman, Dr. H. C. Hinshaw and Dr. F. C. Mann, and Dr. K. H. Pfuetze, of Cannon Falls, Minn., who have been giving it a trial do not know yet whether it will prove to be a chemical cure for tuberculosis.

The healing mechanisms in this disease act slowly, so that results of treatment cannot be noted as rapidly as in an acute infection like pneumonia. The course of tuberculosis is variable and unpredictable, the doctors further point out. This adds to the difficulty of judging the value of a chemical remedy. For the present, therefore, tuberculosis treatment will have to continue along conventional lines with "no hope of immediate prospects for simplified therapy."

Science News Letter, March 18, 1944

METALLURGY

Silver Powder Substance Makes Conductive Coating

➤ SILVER POWDER, in a new ceramic type composition for use as a coating on electrically non-conductive materials such as glass and wood, gives the surface high electrical conductivity and low electrical resistance. The new composition is applied by brushing, dipping or spraying, and dries in the air without heat application except in special cases.

The new material, developed by E. I. du Pont de Nemours and Company, will be of value particularly in electrical condensers and other units employed in electric circuits. Several different forms are being made, each designed to meet the varying requirements of different base materials and degrees of adherence and film toughness. All are dull metallic gray in appearance, and are little affected by aging.

Science News Letter, March 18, 1944

IN SCIEN

STATISTICS

War Decline in Birth Rate Has Started in U. S.

➤ THE WAR'S effect on the nation's birth rate has now reached the point where a decline has set in. The decline will continue for the duration and at least one year after, statisticians of the Metropolitan Life Insurance Company predict.

For the current year they expect births to be 15% below last year's number.

The peak of the wartime spurt in the birth rate came in the winter of 1942-43 when births in 11 large cities of the nation were averaging between 1,100 and 1,200 a day. Since September, 1943, however, births have been less than in the corresponding month of the previous year and by December, 1943, they had fallen 22% below the unusual peak of December, 1942.

Science News Letter, March 18, 1944

MEDICINE

Seasickness Preventives To Be Ready This Spring

➤ AN ANNOUNCEMENT that capsules for prevention of seasickness and other kinds of motion sickness will be generally available to U. S. Army medical officers this spring appears in the *Bulletin* of the U. S. Army Medical Department. (March)

Officially known as Item 12960, Motion Sickness Preventive, U. S. Army, six capsules in a box, the preventive is expected to be useful in amphibious operations and transportation of personnel by sea and possibly also for prevention of air sickness.

At least 50% reduction in occurrence of motion sickness can be achieved, it appears from tests of the preventive that have been made over several months in continental United States and from limited tests under actual field operations.

The ingredients of the preventive are being kept secret, but it contains a sedative. When used in accordance with the directions printed on the box, it has no significant untoward effects. Because of the sedative in it, however, excessive use may cause drowsiness with resulting decrease of physical efficiency.

Science News Letter, March 18, 1944

E FIELDS

ENGINEERING

Electric Hoist Invented For Handling Bombs

➤ AN ELECTRIC hoist, suitable for handling bombs and similar heavy weights aboard giant flying boats and other delicately balanced craft, both air and sea, is the subject of two patents, 2,343,638 and 2,343,640, issued to G. E. Bock and A. J. Brown, respectively, of Chicago. Both patents are assigned to the Whiting Corporation of Harvey, Ill.

In a typical form, a track runs along the length of each wing, carrying a balanced pair of trucks. Suspended beneath each of these is a hoist. The bombs, or other objects to be put overboard, are stowed in the hull. The hoists pick up two of them simultaneously, lift them to wing level and run them out well clear of the hull. Magnetically operated latches make certain that both loads are released at the same instant.

Science News Letter, March 18, 1944

MEDICINE

Hope That Penicillin May Cure Parrot Fever

➤ HOPE that penicillin may prove a remedy for psittacosis and the related disease, ornithosis, is held by Dr. F. R. Heilman and Dr. W. E. Herrell, of the Mayo Clinic, on the basis of experiments with mice.

Psittacosis, or parrot fever, became generally known in this country in the winter of 1929-1930 during an outbreak in which almost one-fifth of the patients died. Chickens, doves, many types of finches and pigeons as well as parrots may be infected with the virus of the disease. This has led scientists to adopt the name ornithosis for the sickness in humans when it is not definitely due to association with parrots or lovebirds.

The ornithosis virus may frequently cause atypical pneumonia in man, according to findings by a number of doctors. So far, no remedy, including the sulfa drugs, has proved effective in ornithosis in man or laboratory animals.

In their tests with mice, the Mayo Clinic doctors inoculated 80 animals with the virus of ornithosis. Of 40 that were not given penicillin, 35 died. Of 40 treated with penicillin, only two died.

"The results of these studies," they state, "and the close relationship between the strains of the viruses of ornithosis and psittacosis make it hopeful that penicillin will have a favorable therapeutic effect on these virus infections in man."

The penicillin used in the experiments was provided by the Office of Scientific Research and Development from supplies assigned by the committee on medical research for experimental investigations recommended by a committee of the National Research Council.

Science News Letter, March 18, 1944

INVENTION

Making Polarizing Films Simplified by Invention

➤ PRODUCTION of polarizing films, which are used in various ways for the control of light and elimination of glare, is simplified and speeded by an invention of Edwin H. Land of Cambridge, Mass., on which he has received patent 2,343,775. Such films are usually prepared by distributing in or on a suitably adhesive transparent film an even mass of microscopic needle-like crystals with their long axes all pointed in the same direction. This converts the film into an effective light filter that permits light to pass only with its wavefronts moving in the same direction.

In the present invention, two methods for getting the crystal axes parallel are provided. They may be extruded in a uni-directional flow, or pulled around as tiny magnets in a sufficiently strong magnetic field.

Rights in the patent are assigned to the Polaroid Corporation.

Science News Letter, March 18, 1944

ENGINEERING

Centrifuge-Like Machine Separates Blood Serum

➤ SAVING of life as well as its warlike destruction is becoming increasingly mechanized nowadays. In line with progress in this direction is a blood-separating machine on which patent 2,343,694 was obtained by Elisabeth E. Mitchum of Johnson County, Kansas. Essentially it is a centrifuge, resembling the ordinary cream separator. Instead of whirling butterfat globules out of milk, however, it whirls red corpuscles out of animal blood, so that the latter can be used in veterinary preparations.

Science News Letter, March 18, 1944

MEDICINE

Cartilage Banks Urged For Face Injury Repair

➤ ESTABLISHMENT of something new in medical banks, cartilage banks, is urged by Lt. Col. Leslie L. Nunn, M.C., A.U.S., in the *Bulletin* of the U. S. Army Medical Department. (March)

Supplies from such banks would be drawn on for grafts needed to repair bony defects of the face, especially of the nose, cheek bone and eye sockets. Human cartilage is considered the most satisfactory material for this purpose, Colonel Nunn points out. Until recently such grafts have been taken from the patient's own ribs, but the procedure is time-consuming, painful, and to a certain extent hazardous.

Colonel Nunn has already established two cartilage banks, one at the Barnes General Hospital, Vancouver Barracks, Wash., and the other at the hospital to which he is now attached.

The cartilage is taken from cadavers of young, healthy persons who have been accidentally killed within the past few hours. Freedom from syphilis and tuberculosis is essential but blood type has no bearing on the case.

The cartilage is removed with precaution against germs and placed in sterile normal salt solution. It can be stored in this in a refrigerator for 48 hours. For final storage, after cleaning and scraping off all muscle and covering membrane, the cartilage pieces are placed in a solution of merthiolate and salt in pint economy-type jars which then are put into the ice box.

Science News Letter, March 18, 1944

CHEMISTRY

Complex Relative of TNT Used To Kill Termites

➤ A COMPLEX relative of TNT is used to kill termites in the soil, in a chemical patent obtained by Frank H. Kaufert of St. Paul, Minn. However, as employed against termites it is a phase of chemical warfare, rather than a blasting explosive. The substance is known as dichloro-hexanitrotoluene. Dissolved in a suitable petroleum vehicle, it is used for soaking the soil around wooden structures. Termites hate it, and keep their distance. Rights in the patent, No. 2,343,415, are assigned to E. I. du Pont de Nemours & Company.

Science News Letter, March 18, 1944

MEDICINE

Birth Control Aid

Keeping daily temperature graph advised as simple way to help couples using "safe period" method and also childless couples who want babies.

➤ CHILDLESS couples eager to have a baby and others using the "safe period" method for postponing or avoiding blessed events may both be helped by a method reported by Dr. Pendleton Tompkins, of Philadelphia. (*Journal, American Medical Association,* March 11)

The method depends on the fact that a woman's body temperature varies during the course of each month. During the first part of the physiological (not calendar) month it is relatively low, drops to a minimum when ovulation occurs and then rises sharply to a definitely high level which is maintained until the next physiological month starts.

Immediately following ovulation, or the escape of an unfertilized egg cell from the ovary, is the time when conception is most likely to occur. Because of the sharp drop and subsequent sharp rise in temperature at the time of ovulation, a graph of the daily temperature provides a simple method, Dr. Tompkins states, for a woman to determine the "unsafe period" if she is practising birth control.

In the case of childless couples desiring a baby, the method is an adjunct to studies the doctor will make to diagnose, if possible, the cause of sterility in either the man or the woman.

The temperature variation is slight, only a few fifths of a degree, so the daily temperature must be taken, Dr. Tompkins points out, with the "utmost practical accuracy." He instructs his patients, among other things, to take the temperature immediately on awaking in the morning, before arising, eating, drinking or smoking.

Science News Letter, March 18, 1944

MEDICINE

"Cocktails" for Cancer

Radioactive phosphorus plus X-rays credited with 13% to 15% cures of certain groups of leukemias and malignant growths, cancer society announces.

➤ COCKTAILS of radioactive phosphorus combined with X-rays in treatment of leukemia, lymphosarcoma, plasma cell myeloma, Hodgkin's disease and polycythemia vera are "producing cures in certain disease groups of from 13% to 15%," the American Society for the Control of Cancer announced.

The announcement came in answer to a question submitted by Watson Davis, Director of Science Service, for discussion by cancer authorities who each year meet with and answer questions for newspapermen and women representing the National Association of Science Writers.

The combination of radioactive phosphorus and X-rays has been used to treat about 100 patients at Memorial Hospital. Chronic lymphatic leukemia is markedly improved as shown by a marked diminution in the number of white blood cells whose overproduction is a feature of this cancer-like disease. The quality of the red blood cells also improves under the treatment. In cases of lymphosarcoma, there is a reduction in the size of the masses or tumors. There is marked improvement in cases of polycythemia vera. The radioactive phosphorus may be injected into a vein but doctors at Memorial Hospital prefer to give it by mouth.

A spectacular new field of diagnosis of cancer has been opened by the use of different substances given radioactivity through the cyclotron. One of these substances, irradiated iodine, has been used to treat both cancer and benign tumors of the thyroid gland. At Memorial Hospital one of the patients so treated later complained of pain in a small area of his skull.

Running a Geiger counter, a device for detecting radioactivity, over the patient's skull, the doctor found marked activity at the area the patient said was painful. It proved to be a tiny spot to which the thyroid cancer had spread. Some of the radioactive iodine used in treatment had followed the bit of thyroid cancer in its spread from the neck to the head and located it for the doctors before X-ray pictures could.

The possibilities along this new direction in cancer diagnosis are "limitless," the statement prepared by cancer authorities declared.

"Due to the susceptibility of certain tissues to take up specific substances," they stated, "new clues are revealed not only in diagnosis but also treatment. For example, irradiated zinc is deposited in the pancreas, irradiated sulphur in the skin, irradiated strontium in the cortex of bones. These suggestions should be rapidly pursued both as to diagnosis and treatment of cancer cases."

Science News Letter, March 18, 1944

GENERAL SCIENCE

Argentine Persecution Of Scientists Protested

➤ AN OFFICIAL protest against the persecution of Argentine scientists, educators and professional men who participated in issuing a Declaration for Effective Democracy and American Solidarity has been voiced by the American Association of Scientific Workers.

This declaration, in essence, "simply approves the principles of democracy and calls for the cooperation of free men in its preservation," the association stated in a letter to the Secretary of State, Cordell Hull, issued from their national headquarters.

The association urged that "the government of the United States of America, in concert with other nations of this Hemisphere, take whatever actions may be most effective to the end that the Government of Argentina rescind its undemocratic decrees."

Among the 150 leading citizens of Argentina who last October signed this call for a democratic Argentina were many members of the staffs of the Universities of Buenos Aires, Rosario, Cordoba and La Plata, and therefore employees of the state. All the signers of the declaration have been dismissed from their posts and the medical men forbidden to practice.

Dr. Bernard A. Houssay, outstanding South American physician and professor, was one of those dismissed from their posts in Argentina and reported to have taken refuge in Uruguay.

Science News Letter, March 18, 1944

THERE ARE STILL UNDISCOVERED CONTINENTS

COLUMBUS had a definite goal—a westbound sea route to Asia. But what he found was a new continent—a new source of Nature's wealth.

Modern research also has its goals: it, too, discovers new resources. Starting from the knowns of science, it charts its voyages into the unknown. Behind each voyage is a theory that there is a passageway.

But research doesn't hold stubbornly to its theories. If it finds islands instead of a continent, it accepts them, for it expects the unexpected. It studies their relation to the known lands of science. And on the basis of its increased knowledge, it makes revised plans for progress. In science there is always a continent ahead.

Just what research will disclose can never be forecast. But history has proved that from research flow discoveries of value to mankind. From Bell Telephone Laboratories there has poured a full stream of improvements in the telephone art.

Bell Laboratories has kept America leading the world in telephony. And its researches have contributed importantly to other arts of communication—to the phonograph and sound-motion pictures, to radio broadcasting and television.

Today, as ever since Pearl Harbor, its efforts in research and design are devoted to the war needs of the nation.

When peace comes, its organized teams of research scientists and engineers will continue to explore and invent and perfect for the improvement of telephony.

BELL TELEPHONE SYSTEM

Do You Know?

Pork liver is higher in iron than other animal livers.

There is approximately one *horse or mule* in the United States for every 10 persons.

The *sponge* is capable of standing great abuse without being killed; but it cannot live long out of water.

A single pocket *gopher* has been known to dig an underground tunnel over 600 feet long in 48 hours.

The United States produced in 1942 approximately 119,000,000,000 pounds of *milk*, or about 440 quarts per person.

Wool waste to clean greasy machines is replaced in part at least with a material made from peanut shells, rice hulls, corncobs, and other farm wastes.

A typical *hen* of a well-bred laying stock, weighing 4½ pounds, produced 385 eggs weighing 48 pounds in two years; she consumed 160 pounds of feed.

The tallest living *tree* in the United States, 364 feet high, is a California coast redwood in Humboldt State Park; some claim it is the tallest tree in the world.

Chemotherapy, the treatment of infectious diseases with specific chemicals, originated in the 16th century, when the beneficial effect of mercury in the treatment of syphilis was discovered.

Red squill, one of the most important poisons used in the control of rats, is again coming into the United States from North Africa as a result of improved conditions in the Mediterranean area.

A *diamond* of gem quality, weighing about 530 carats in the rough, was recently found in Sierra Leone, Africa; this is more than twice the size of any previously found in this British Colonial Empire.

Oil wells will soon be drilled in the Cerritos channel between Los Angeles and Long Beach to recover an estimated 17,000,000 barrels of oil in 92 acres of government-owned property without interference with shipping.

AERONAUTICS

Folding-Wing Airplane Has Hinge in Middle

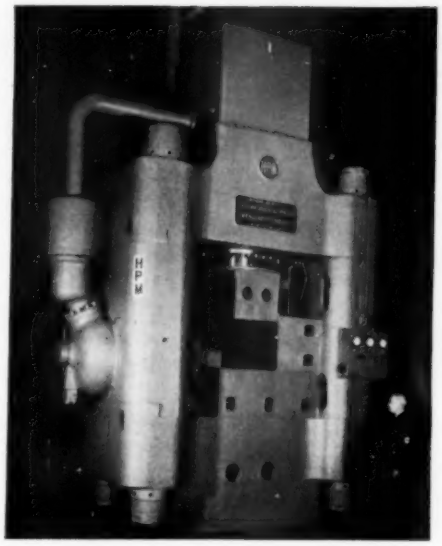
➤ A FOLDING-WING airplane designed by E. G. Dickinson of Olcott, N. Y., and S. T. Payne of Kenmore, N. Y., has been granted patent 2,343,645.

Most present-day planes in this class either fold their wings up over their backs more or less like butterflies, or swing them back along their bodies, like flies or bees. The present invention introduces a new feature. The bases of the wings are hinged to turn upward, but somewhat less than half-way along the wings' length is a second hinge, enabling the outer portions to swing down.

In resting position, therefore, the outline of the plane suggests a bird with half-folded, drooping pinions. This method of folding is claimed to give greater stability to planes on the ground or flying boats on the water because the center of gravity remains in essentially the same position in both folded and extended states. It also saves stowage space in carriers or hangars.

Rights in the patent are assigned to the Curtiss-Wright Corporation.

Science News Letter, March 18, 1944



HERCULEAN—This hydraulic press, one of the largest ever built for powdered metallurgy, was designed by the Hydraulic Press Manufacturing Co., Ohio, for briquetting powdered carbides of tungsten, titanium or tantulum for carbide cutting tools, dies and inspection gauges. It can press downward with a 1,500-ton force and horizontally with a 1,000-ton force.

BIOCHEMISTRY

Like Permanent Wave

Blood clotting found due to change in molecular shape of same kind involved in giving hair a long-lasting curl, report from England states.

➤ A CHANGE in molecule shape of the same kind involved in putting a permanent wave in hair plays a basic part in making blood clot, it appears from reports received of experiments by Dr. K. Bailey, of the Biochemical Laboratory, Cambridge University, and Dr. W. T. Astbury, Dr. K. M. Rudall and Dr. W. C. Evans, of Leeds University.

Blood clotting is due to the change of the fibrinogen in the blood into fibrin. This change, the English scientists have found by X-ray analysis, depends on a change in molecular shape of the same kind as occurs in the contraction of muscle tissues and the elastic stretching of skin and hair.

"In fact," says the report in the British Council's *Monthly Science News* (February), "the permanent wave set in a lady's hair and the curls in a ram's horn set up by nature depend on the same kind of molecular change as occurs when blood clots."

The existence of the same molecular machinery in all these varied tissues suggests to Dr. Astbury and his colleagues that all of them spring from the same peculiar shape of the molecule and are therefore probably all adaptations of a single root idea.

"Like other biological discoveries," the report continues, "it suggests that the vast variety of living things springs from variations on a few root ideas and mechanisms. This in turn leads to the thought that many of the complications of nature may be unlocked by a few simple keys, and that biological problems which seem at present utterly insoluble will one day be solved quite simply."

Science News Letter, March 18, 1944

RESOURCES

Coal Wants Lost Markets

➤ COAL WANTS to regain lost markets for millions of tons a year replaced by liquid and gaseous fuels during the past 20 years. The result is the pursuit of much research on coal; coal mining, efficiency in coal use, decreasing nuisances associated with coal-burning, and improvement in securing the full utilization of coal chemicals. This research is conducted by the government, the coal industry, the chemical industry and others interested.

A report on research for the coal industry was presented at the New York meeting of the American Institute of Mining and Metallurgical Engineers by C. E. Lesher, president of the Pittsburgh Coal Carbonization Company. "Coal," he said, "has been fighting a rear-guard action since the last World War." Organized research is the new weapon it is now using.

Coal research in the more efficient use of this fuel has already produced some outstanding results, the speaker said. In 25 years a decrease of 34% in coal is required by the railroads to haul 1,000 gross ton-miles of freight; 30% less is required to produce a kilowatt of electrical energy by central power stations, and 20% less is used in making pig iron.

The smoke nuisance can be eliminated if the coal is "burned smokelessly by means of proper mechanical equipment or converted to smokeless fuel." Research has developed "principles for smokeless heating stoves and ranges of new designs."

"Already there are more chemicals, drugs, dyestuffs, plastics, explosives and disinfectants made from what are commonly called coal-tar products than are made from petroleum," he declared. "Coal has been the source of the chemicals from which the greater part of plastics—the phenol formaldehyde resins—have been made." The phenol obtained as a by-product in making coke was sufficient in 1941 for the production of 8,000,000 pounds of nylon, enough to make 256,000,000 pairs of stockings.

The coal chemicals are now obtained as by-products in coking. "If through research it is found worth while to process coal to get the coal tar products, a wider use of coke must be found." There is reason to believe, he said, that the yield of tar acids from coal by a hydrogenation process may be ten or more times greater than by the present process by carbonization. If this process is developed and employed there would be no coke and the coal would be a direct source of the chemicals required for phenolic plastics.

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SOCIOLOGY

Women Can Help Apply Science to Human Problems

By DR. MARGARET MEAD

Associate Curator, Department of Anthropology, American Museum of Natural History

Excerpts from address given before the Science Talent Institute.

➤ THE major problem in the application of the physical sciences to nature in the last century was simply to develop them far enough so that they were applicable. But in the social sciences, we have two tasks, (1) to develop the social sciences to the point at which they will be available to the world, (2) to take responsibility for the way in which all science is applied to the solution of human problems. It is in this second phase that women should have a special contribu-

Advancing Knowledge

of nutrition confirms over and over again what important role the RIGHT KIND of proteins play in the process of living.* The proteins of meat are of the right kind, of highest biologic efficacy, adequate for every protein need in the organism.

*"The relative importance of the protein fractions is only now becoming sufficiently known and understood. The proteins guard the body's ability to replace its losses through ordinary wear and tear as well as through disease and operative procedures, and they increase the readiness of wounds to heal. The proteins protect us against infection by increasing the antibody protection of the body. By virtue of their lipotropic power, they help to restrain any tendency to store abnormal amounts of fat in the various organs, notably in the liver. They furnish the factors which control hemorrhage. And an abundant, rich protein supply gives a sense of well-being and vigor and does away with fatigue." (Wilensky, A. O.: The Food Problem in the Present and in the Postwar World. Editorial. Rev. Gastroenterol. 10:314, December 1943).

ACCEPTED AMERICAN MEDICAL ASSN. Council on Foods

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

AMERICAN MEAT INSTITUTE

MAIN OFFICE, CHICAGO . : . MEMBERS THROUGHOUT THE UNITED STATES

tion to make, a contribution which draws upon their experience in rearing children. Out of their knowledge that one can only determine direction but not set final goals, out of their knowledge of growth, of the way in which the developing child must be set free to follow his own path, we may be able to derive a useful ethic which can serve as a control to the kind of social planning which would enlist social scientists in blueprinting the world, and so robbing men of their freedom. If the natural sciences, especially as they have been used to develop a mechanized society, are taken as our model, then the whole emphasis falls upon the perfect blue-print, and the means for making materials and men themselves conform. If the biological sciences, and the ways in which these are integrated with problems of human development, especially child development, are taken as a model, the emphasis is upon establishing a process which must, if it is whole, be autonomous and free.

No problem is more challenging, no problem will be so rewarding to help solve, as this: How we are to combine increasing knowledge with increasing freedom and increasing dignity for man. If women respect their own sex heritage and if the men with whom they work respect it, they should have something quite special to contribute to the central problem of the 20th Century.

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Salvaged *cartridge cases* will now be used to make new pennies for America; the metal, contaminated with lead and antimony from firing, is not suitable for reuse in ammunition.

What happens when your hat comes down?

SOMEDAY the War will be over.

That'll be quite a day. But what about the day after?

No man knows just what's going to happen then. But we know one thing that must *not* happen:

We must *not* have breadlines and vacant farms and jobless, tired men in Army overcoats tramping city streets.

That is why we must buy War Bonds—now.

For every time you buy a Bond, you not only help finance the War. You help to build up a vast reserve of postwar buying power. Buying power that can mean millions of postwar jobs making billions of dollars' worth of postwar goods and a healthy, prosperous, strong America in which there'll be a richer, happier living for every one of us.

To protect your Country, your family, and your job *after* the War—*buy War Bonds now!*

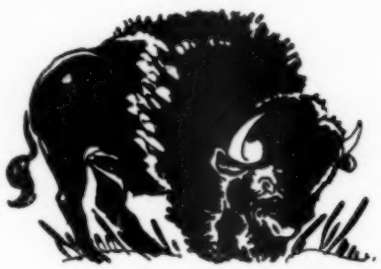
Let's all

KEEP BACKING THE ATTACK!

ZOOLOGY

NATURE RAMBLINGS

by Frank Thone



Survival by Sufferance

➤ GLADIATORS in the Roman arena, before the games began, made a ceremony of greeting the Emperor as men who were about to die. Only in this late time, however, has tyrant man troubled himself to bestow a passing salute on animals about to die.

It seems a great pity, to us of a conservation-minded generation, that our predecessors did not leave us more nearly complete and adequate descriptions of the wildlife they so thoughtlessly destroyed. We could run some of our own undertakings better if we only had such data, now forever unobtainable. However, such lamentation is after all a bit illogical: if our forebears had considered it worth while to describe at all carefully the wildlife of their day, they would also have considered it worth while to preserve at least fair samples of it.

An effort to set down all obtainable facts about that great section of wildlife that goes on all fours has at last been made, in a recent book called *Extinct and Vanishing Mammals of the Western Hemisphere,* by Glover M. Allen, published by the American Committee for International Wild Life Protection ($4.50). As the title indicates, some of the species (a regrettably large number, as a matter of fact) are already gone. All that can be done in their case is to comb old records carefully, and examine skulls and other study material in museums; as a rule this material is fragmentary at best.

Other species (also regrettably many) are listed as in no immediate danger, since our suddenly remorseful consciences have finally induced us to stop shooting, and even to set up refuges.

But when we compare the former numbers and range of such an animal as the bison, for example, with its present penned fragments, it becomes evident that it is a vanishing species after all, its existence continuing only on sufferance. This is brought home very sharply in the case of the grizzly bear in the United States, which gets shot whenever it wanders out of its two federally protected refuges in Yellowstone and Glacier National Parks.

To a very large extent, of course, the extermination or pushing into corners of many wild animal species has been inevitable, and lamentations over their fate will simply not be listened to by the average citizen. So long as man regards his interests as paramount, and prefers beef to venison or jerked buffalo meat, we can expect him to carve out farms and ranches at the expense of forest and prairie; and we can expect, too, that he will exterminate costly predators like timber wolves and cougars if he is able.

It is wholly within reason, on the other hand, to demand and expect a restraint on wanton or over-greedy hunting that would wipe out the beasts that bear the golden furs. In this we have succeeded rather conspicuously with the fur seal, and seem to be succeeding with beaver. There is renewed hope for the sea otter. Perhaps still others may be added to the list of "managed" survivals.

Science News Letter, March 18, 1944

Books of the Week

ECONOMICS of food, in national and international aspects, are presented palatably but with substance by John D. Black, in FOOD ENOUGH (*Jaques Cattell*, $2.50). Concern is mainly with the wartime situation, but some consideration is given to post-war food problems.

Science News Letter, March 18, 1944

PACKED from cover to cover with information covering all phases of its subject is THE FORESTRY DIRECTORY, compiled by Tom Gill and Ellen C. Dowling (*Am. Tree Ass'n.* $2). Organization—state, national, Canadian, private—statistics, education, conservation, legislation, are among the many topics treated.

Science News Letter, March 18, 1944

FIREWORKS are grimly employed nowadays, as signals and night illuminants on the battlefield; in a better time to come, they may again be employed in their traditional role, celebrating the attainment of freedom. For either purpose, G. W. Weingart's PYROTECHNICS, CIVIL AND MILITARY (*Chem. Pub. Co.*, $5), tells how to make, and what to use in the making. It is a book for professionals, with fascinating interest for lay readers—especially for younger males.

Science News Letter, March 18, 1944

Just Off the Press

THE AIRPLANE POWER PLANT—Francis Pope and Arthur S. Otis—*World Book.*, 188 p., illus., $1.40.

BASIC AIR NAVIGATION—Elbert F. Blackburn—*McGraw-Hill*, 300 p. illus., $3.00.

THE BASIC TEACHINGS OF THE GREAT PSYCHOLOGISTS—S. Stansfeld Sargent—*New Home Library*, 346 p., 69c.

DICTIONARY OF SOCIOLOGY—Henry Pratt Fairchild, ed.—*Philosophical Library*, 342 p., $6.00.

FUNDAMENTALS OF PHYSIOLOGY—The Human Body: Its Function and Structure—Elbert Tokay—*New Home Library*, 336 p. illus., 69c.

A GUIDE TO NAVAL AVIATION—Wallace W. Elton, Alfred H. Discoll, Robert N. Burchmore and Gray B. Larkum—*McGraw-Hill*, 296 p. illus., $2.50.

THE HUMAN EYE IN ANATOMICAL TRANSPARENCIES—Peter C. Kronfeld and Stephen L. Polyak; paintings by Gladys McHugh—*Bausch & Lomb*, 99 p., illus., $6.50.

I WANTED TO SEE—Borghild Dahl—*Macmillan*, 210 p., $2.00. The story of a woman's lifelong battle against the handicap of blindness.

THE ILLUSTRATED AVIATION ENCYCLOPEDIA—Norman V. Carlisle, ed.—*New Home Library*, 236 p., illus., 69c.

INDEX TO THE LITERATURE OF FOOD INVESTIGATION—Agnes Elisabeth Glennie and Catherine Alexander, compilers—*British Inf. Services*—225 p., paper, $1.35.

MAGNETOCHEMISTRY—Pierce W. Selwood—*Interscience*, 287 p., illus., $5.00.

MAP READING FOR THE SOLDIER—*Infantry Journal*, 110 p., illus., paper, $1.00.

MATHEMATICS FOR NAVIGATORS—Delwyn Hyatt and Bennett M. Dodson—*McGraw-Hill*, 106 p., $1.25.

THE METALLOGRAPHY OF METEORIC IRON—Stuart H. Perry—*Govt. Print. Off.*, 206 p., illus., 60c., paper, Bulletin 184.

ROSE'S FOUNDATIONS OF NUTRITION—Grace Macleod and Clara Mae Taylor—*Macmillan*, 594 p., illus., $3.75, 4th ed. rev.

RUBBER AFTER THE WAR—K. E. Knorr—*Stanford Univ.*, 46 p., 25c., paper.

SEA FOOD COOKERY—Lily Haxworth Wallace—*Barrows*, 180 p., $2.00.

STUDIES OF CENTRAL AMERICAN PLANTS—IV—Paul C. Standley and Julian A. Steyermark — *Field Museum*, 109 p., paper, 50c., Publication 549.

TEACHERS FOR OUR TIMES—Commission on Teacher Education—*Amer. Council on Education*—178 p., $2.00. The council's commission on teacher education issues a statement of purposes dealing with the social significance of teaching and teacher education and the qualities that should be sought for in teachers who are to guide our young people during the generation that lies ahead.

U. S. COAST GUARD: Pictorial and Service Guide—*Hastings*, 72 p., illus., $1.

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•New Machines and Gadgets•

⚙ *AN OVERCOAT with permanently attached mittens or gloves, recently patented, is so made that the handcovering can be turned back to form cuffs. Zippers are used to open these mittens or gloves, which just can't be lost or misplaced.*

Science News Letter, March 18, 1944

⚙ *AN AIR-PROPELLED autosled with both ski runners and wheels has been recently patented. Both runners and wheels are retractible, so that either may be used. The propeller blades are at the rear. Stub wings tend to raise the front slightly when the vehicle is in rapid motion.*

Science News Letter, March 18, 1944

⚙ *WINGED DEFLECTORS mounted on the hoods of automobiles prevent insects, dust, dirt and snow from landing on the windshields. This newly patented device, made of a transparent material which does not obstruct the view, deflects the air encountered by the moving car away from the windshield area.*

Science News Letter, March 18, 1944

⚙ *FLASHLIGHTS with light bulbs at the end of the long necks of flexible metal tubing are used to illuminate hard-to-get-at places. The tube of the one shown in the picture can be bent as desired by hand.*

Science News Letter, March 18, 1944

⚙ *AERIAL CAMERAS, made to photograph enemy territory from altitudes of 40,000 feet or more, are given severe low-temperature tests in chambers chilled to 70 degrees below zero Fahrenheit. Testers wear Eskimo outfits.*

Science News Letter, March 18, 1944

⚙ *INK-DISTRIBUTING rollers on off-set printing presses and duplicating machines are now made of a plastic, methyl methacrylate resin. They are durable and easily cleaned. The transparent plastic shows ink that might otherwise be overlooked.*

Science News Letter, March 18, 1944

⚙ *AN ERASER DEVICE, recently patented, consists of an elongated case containing erasing material which can be pushed out as it wears off just like the lead in a mechanically fed pencil. The lower end of the casing is bevelled.*

Science News Letter, March 18, 1944

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 199.*

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